Well Sampling Method
(Low Flow)
Standard Operating Procedure

REFUSE DISPOSAL DIVISION

Groundwater Monitoring

(For Non-LNAPL sites)

This procedure is designed to assist the user in taking representative groundwater samples from groundwater monitoring wells. The groundwater samples will be collected using low-flow (minimal drawdown) purging and sampling methods and is based upon U.S. EPA, Ground Water Issue, Publication # EPA/540/S-95/504, April 1996.

The field sampler's objective is to purge and sample the well so that the water that is discharged from the pump, and subsequently collected, is representative of the formation water from the aquifer's identified zone of interest.

1. Calibrate all field instruments at the start of each day's deployment per the instrument manufacturer's instructions. Record calibration data on the *Field Calibration Documentation Form* (EMS Document Control No. RDD-F-GW-09).

2. Drive to the first well scheduled to be sampled (typically the least contaminated). Make notes in the *Field Activity Log* (EMS Document Control No. RDD-F-01) describing the well condition, personnel, weather, location, etc.
   ***Note** – Start at up-gradient wells whenever possible.

3. Clean (phosphate-free detergent, rinse twice with distilled water) depth meter, purge pump, purge tubing safety line and bailer before any sampling or measuring.
   ***Note** – Anything to be put into well must be CLEANED before hand.

4. Measure the depth to water from the surveyed reference mark on the wellhead and record the measurement on the gauging and sampling sheet. Lock the water level meter in place so that the level can be monitored during purging and sampling. When placing the probe in the well, take precautions to not disturb or agitate the water.

5. Connect the compressed air source's airline to the pump controller's "AIR IN" connection (If utilizing a gas-engine operated generator, locate the generator at least 25 feet down wind from the wellhead).

6. Connect the pump controller "AIR OUT" air-line to the bladder pump's air supply fitting at the wellhead. (If using electric pump, connect to generator's electric panel.)

7. Connect the pump discharge line to the in-line flow cell's "IN" fitting. (If electric, same as above.)

8. Connect the flow cell's "OUT" line and secure to drain the purge water into the purge water collection container.

9. Start the air supply to the pump. Set the pump controller settings to the documented settings for the specific well. Confirm the flow rate is equal to the well's established

optimum flow rate. Modify as necessary and document any required modifications. (If electric, document MHz pump frequency for optimum flow rate.)

10. Monitor the water level and confirm that the water level drawdown has stabilized within the well's allowable limits.

11. After a single pump-system's volume (bladder volume + discharge tubing volume) has been adequately purged, read and record water quality field measurements every three to five minutes until all parameters have stabilized within their allowable ranges for at least three consecutive measurements. When stabilization has been achieved, sample collection may begin.

12. Disconnect the flow cell and its tubing from the pump line before collecting samples. Decrease the pump (MHz) rate to 100 milliliters per minute or less by lowering the controller's air pressure setting or MHz pump frequency prior to collecting samples for volatiles. Place the samples in a cooler with enough ice to keep them at four degrees Celsius.

13. Once samples for volatiles have been collected, re-establish pump flow rate to the original purge flow rate by inputting the documented controller settings for the well without the In-Line Flow Cell connected and collect remaining samples.

14. When all sample containers have been filled, make a final measurement of the well's Static Water Level and record the measurement on the gauging and sampling sheet.

15. Measure and record total purge volume collected. Consolidate generated purge water.

16. Remove and decontaminate the depth-to-water gauge with phosphate-free detergent, rinsing twice with distilled water.

17. Clean and decontaminate the In-Line Flow Cell with phosphate-free detergent, rinsing twice with distilled water.

18. Disconnect the controller air supply to the pump. Disconnect electric cables to generator.

19. Secure the wellhead cover and secure with its lock. Move equipment to next well to be sampled.

Benefit of Compliance to Instruction:

- Ensures consistency in all readings
- Compliance with Regulatory guidelines
- Minimal purge water generated

- Provides proper QA/ QC for all wells sampled
- Allows for a consistent, reliable, historical record of analytical results
- Identifies impacts to groundwater

Consequence of Non-Compliance to Instruction:

- Inaccurate readings
- Useless data that must be sampled again
- Re-sampling and analysis cost
- Disciplinary action
- Impacts to groundwater not identified in timely fashion

Environmental Management System (EMS) –ISO 14001 *PROCESS MAP #: GW-1.0*

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